



SDMS Doc ID 2012837



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Secretary for
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California Regional Water Quality Control Board

Lahontan Region

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Gray Davis
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JUL 03 2003

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San Diego, CA 92132

REQUEST FOR A TECHNICAL REPORT ON EMERGENT CHEMICALS SOURCES AND SAMPLING, BARSTOW MCLB, BARSTOW

The California Regional Water Quality Control Board ("Regional Board") is the public agency with primary responsibility to protect groundwater and surface water quality within this Region. This Regional Board requests your assistance in identifying potential sources of emergent chemicals, {perchlorate, n-nitrosodimethylamine (NDMA), 1,4-dioxane, 1,2,3-trichloropropane, chromium VI, and polybrominated diphenyl ether (PBDE)}, in soil, groundwater or surface water. Our priority in this regard is assessing the groundwater quality associated with former and active military facilities for the presence of emergent chemicals of concern. We are requesting you submit a Source Evaluation Report, identifying sources of emergent chemicals at all areas of concern (AOC), installation restoration (IR) and operable unit (OU) sites within the facility.

SUMMARY

The detection of emergent chemicals in groundwater, above State and Federal maximum contaminant levels (MCLs) or action levels (ALs) have recently caused this Regional Board to reassess the threat posed to groundwater resources used for domestic and municipal supply. Furthermore, many drinking water supply wells have been shut down throughout California due to pollution from one or more of these emergent chemicals. These recent developments have raised concerns about losing beneficial uses of groundwater due to the presence of these chemicals in soil, surface water, or groundwater. Enclosed is a California Environmental Protection Agency (CalEPA) letter expressing these concerns, and a request for cooperation on addressing these concerns.

The presence of these emergent chemicals can increase the costs of effective remediation and has caused the reassessing of cleanup remedies. All of these emergent chemicals have acute to chronic health effects in humans even though some have been found at very low concentrations, i.e. nanograms/Liter (parts per trillion (ppt)). In addition, some of these chemicals are suspected carcinogens. The enclosure to this letter provides additional emergent chemical information.

Based upon our knowledge of military facilities, we believe that sources for emergent chemicals potentially exist at former or active military facilities, which can date back to the early 1940's. Facilities that have taken a proactive approach and already evaluated source areas, and collected data on the emergent chemicals, should respond to the following request by verifying the agencies have the information.

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DIRECTIVES

We are requesting your assistance in identifying sources of emergent chemicals at all AOC, IR and OU sites within the facility for Department of Toxic Substances Control (DTSC) and Regional Board review, regardless of which agency is lead for the facility. The intent in requesting the multiple emergent chemicals is to streamline regulatory review by not sending individual requests. These AOC, IR, and OU, sites should include, but are not limited to:

Potential Source Areas for Emergent Chemicals Associated with Explosives

- Ordnance detonation/disposal sites,
- Missile/rocket test sites and launch pads,
- Catch basins, waste sumps, clarifiers, and settling ponds,
- Decommissioned missile silos,
- Suspected areas where chemicals and pesticides were stored, used, transferred, processed, incinerated, or disposed,
- Firing and bombing ranges, and
- Mock battle training locations.

Potential Source Areas for Emergent Chemicals Associated with Solvent Release Sites

- Catch basins, waste sumps, clarifiers, and settling ponds,
- Paint maintenance, hobby shops, plating shops, and degreasing activities,
- Weapons maintenance or cleaning areas,
- Known release sites, as appropriate, and
- Suspected areas where these chemicals and pesticides were stored, used, transferred, processed, incinerated, or disposed.

In order to assist us in identifying potential sources of emergent chemicals we are asking that a Source Evaluation Report be prepared. Please prepare and submit a Source Evaluation Report for Regional Board and/or DTSC review, by **October 1, 2003**. At a minimum, the source evaluation report should include the following:

1. Property ownership and land use history from original land grant,
2. Locations where emergent chemicals were used and stored on-site,
3. Location and time specific quantities of emergent chemicals used, if available,
4. Handling and storage procedures for the use of emergent chemicals and emergent chemical wastes used and/or generated on site,
5. Emergent chemical data from soil, surface water, and groundwater already collected, and
6. Schedule for when environmental samples will be collected at sites with no existing soil, surface water and groundwater data on emergent chemicals.

Facilities completing the evaluation of sources for the emergent chemicals finding no potential sources should also report the results of the evaluation.

Due to the prevalence of these chemicals in groundwater, all sites with groundwater pump and treat systems should sample the influent to the systems, regardless of whether an identified potential source exists.

Following review of the source evaluation report there will be a determination made by Board and/or DTSC staff if a proposal for collecting emergent chemical data for soil, surface water and

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groundwater is necessary. If it is determined that a sampling proposal is required, the sampling proposal should include the following:

1. Locations, numbers, and identity of proposed wells, surface water locations, and treatment systems to be sampled,
2. The rationale for sampling these selected wells,
3. Proposed soil sampling locations and rationale,
4. A brief description of the methodology proposed to be used to collect the soil and/or water samples, and
5. A schedule for sampling these soils, surface waters and wells.

Samples should be collected as described in a Board and/or DTSC approved sampling proposal. Ideally, at those sites with potential sources, selected groundwater monitoring wells and surface water locations should be sampled during the next scheduled monitoring event for the emergent chemicals and the results transmitted to the agencies in the next groundwater monitoring report for the facility.

TESTING REQUIREMENTS

Listed below are the emergent chemicals of concern and our recommendations with respect to acceptable testing procedures for each of the specified emergent chemicals:

Emergent Chemical	Acceptable Test Method ¹	Reporting Limit
Perchlorate	USEPA Method 314.0	4 µg/L
N-Nitrosodimethylamine (NDMA)	USEPA Method 1625	0.002 µg/L
1,4-Dioxane	USEPA Method 8270	2 µg/L
1,2,3-Trichloropropane	USEPA Method 524.2	0.005 µg/L
Total/Hexavalent Chromium	USEPA Method 200.8/218.6	1 µg/L/0.3 µg/L
Polybrominated Diphenyl Ether	USEPA Method 8270	2 µg/L

The use of these analytical testing procedures by a California Certified Laboratory will provide consistency in the analysis of environmental samples and high quality data necessary to make appropriate regulatory decisions.

If you have any questions, please contact Jehiel Cass at (760) 241-2434.

Sincerely,



HAROLD J. SINGER
EXECUTIVE OFFICER

Enclosures:

1. CalEPA Letter Dated June 6, 2003
2. Emergent Chemical Information

¹ These test methods may require modification, e.g. selected ion monitoring, to achieve the recommended reporting limits.

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cc: State Water Resources Control Board, Office of Chief Counsel, Steven Blum
California Department of Toxic Substances Control, Curtis Plotkin, RPM
USEPA, Superfund Division, Region IX, San Francisco, Kevin Mayer
MCLB Environmental Division, Brett Rains
MCLB Environmental Division, Jack Stormo
USEPA, Region IX, SFD-8-3, Martin Hausladen
TechLaw Inc., Bill Mabey
Foster Wheeler Environmental Corp., Vitthal Hosengadi, Project Manager
Bechtel National Inc., Richard Pawlowicz, Project Manager

TML/cgT: EMERGENCHEMICAL BARSTOW MCLB

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Winston H. Hickox
Agency Secretary
Cal/EPA

State of California
California Environmental Protection Agency

ENCLOSURE 1

Governor



Air Resources Board | Department of Pesticide Regulation, | Department of Toxic Substances Control

Integrated Waste Management Board | Office of Environmental Health Hazard Assessment | State Water Resources Control Board | Regional Water Quality Control Board

June 6, 2003

Mr. John Paul Woodley, Jr.
Assistant Deputy Under Secretary
of Defense for Environment
Department of Defense
3400 Defense Pentagon
Washington, D.C. 20301-3400

Dear Mr. Woodley:

We are writing to seek the cooperation of the Department of Defense (DoD) in addressing perchlorate contamination at DoD's active, closed, and historic military and contractor facilities in California on behalf of my office, the California Environmental Protection Agency (Cal/EPA) and Cal/EPA's Department of Toxic Substances Control (DTSC) and State Water Resources Control Board (SWRCB). The potential sources of perchlorate contamination include facilities that manufacture, conduct research on, and use solid propellants for rockets, missiles, military ordnance, and pyrotechnics. Military and defense contractor facilities are among the known and suspected sources of contamination of this type.

We cannot overstate the seriousness of this problem for the State of California. To date, perchlorate has been detected in more than 300 wells, including public water supply wells. The loss of drinking water supply wells to perchlorate contamination may leave parts of California without sufficient water for the summer months. In response to this crisis, the California Legislature is expressing its interest in finding the sources and solutions to these impacts to the State's water by holding hearings on the matter.

Our efforts to address perchlorate contamination in California warrant a collaborative approach to this environmental crisis. Together, we need to identify sources of perchlorate contamination, coordinate research of treatment strategies and technologies, and eventually clean up both impacted drinking water and water used for other beneficial uses.

Cal/EPA and its constituent boards and departments need to extend this coordinated approach to DoD to address perchlorate and other emerging chemicals of concern emanating from military properties. To that end, the Regional Water Quality Control Boards have coordinated with the SWRCB in preparing a letter to military installations in California requesting assistance in identifying, investigating, and cleaning up sources of

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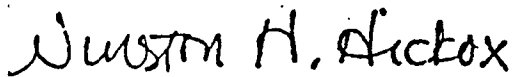
Mr. John Paul Woodley, Jr.
June 6, 2003
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perchlorate and other chemicals of concern on their properties. We have enclosed a copy of this draft letter for your information.

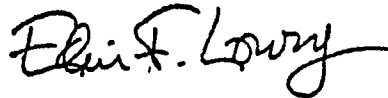
We ask that you direct the installations and appropriate program managers in DoD to assist and cooperate in this effort. In addition, we understand that DoD conducted a national survey of perchlorate contamination on military facilities, and we would request the opportunity to review the results of this survey for installations in California.

Both DTSC and SWQCB representatives are available to meet with you or your staff to further discuss this issue. Should you have any questions or need further assistance, please contact Mr. Frederick S. Moss, Chief, Office of Military Facilities, DTSC, at (916) 255-3750 or Ms. Lisa Babcock, Chief, Land Disposal Section, SWRCB, at (916) 341-5687.

Sincerely,



Winston H. Hickox
Agency Secretary



Edwin F. Lowry
Director
Department of Toxic
Substances Control



Celeste Cantú
Executive Officer
State Water Resources
Control Board

Enclosures

cc: See next page.

Perchlorate (ClO_4) originates as a contaminant in the environment from the inorganic salts of ammonium, potassium, magnesium or sodium perchlorate. This pollutant is exceedingly mobile in aquifer systems. It can persist for many decades under typical groundwater and surface water conditions, because of its resistance to react with other available constituents. Perchlorate is among a group of unregulated chemicals requiring monitoring pursuant to Title 22, California Code of Regulations § 64450. The California Department of Health Services (DHS) action level for Perchlorate is 4 $\mu\text{g/L}$.

N-Nitrosodimethylamine, is also known as NDMA ($\text{C}_2\text{H}_6\text{N}_2\text{O}$), a product from the decomposition of unsymmetrical dimethyl hydrazine, a component used in the production of rocket fuel (Aerozine 50). This chemical is used as an additive in liquid propellant fuel for rocket engines. NDMA is used primarily in research (NTP, 2000), but it can also be formed inadvertently in a number of industrial processes. NDMA is identified as a carcinogen under California's Health and Safety Code Section 25249.5, *et seq.*, and the Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65"). In addition, the USEPA identifies NDMA as a "probable human carcinogen" (USEPA, 1997). The California (DHS) action level for NDMA is 10 ng/L .

1,4-Dioxane is used as a stabilizer for chlorinated solvents or volatile organic compounds (VOCs), particularly 1,1,1-trichloroethane approximately 90% of the 1,4-dioxane produced. Releases of chlorinated solvents or VOCs may be a primary source of 1,4-dioxane in the environment. 1,4-dioxane has a high potential for entering the environment due to its volatility and solubility in water. Spent chlorinated solvents disposed of improperly can contaminate ground and surface water, and 1,4-dioxane has been detected in surface waters throughout the United States. Exposure to small amounts of 1,4-dioxane may lead to significant adverse health effects. The primary routes of exposure include inhalation, ingestion and dermal contact. USEPA has classified 1,4-dioxane as a Group B2, probable human carcinogen of low carcinogenic hazard. The California (DHS) action level for 1,4-Dioxane 2 $\mu\text{g/L}$.

1,2,3-Trichloropropane (TCP): This chemical has been used primarily as a solvent and extractive agent. As a solvent, it has commonly been used as a paint and varnish remover, a cleaning and degreasing agent and a cleaning and maintenance solvent. TCP is not a naturally occurring chemical. Releases to the environment are likely to occur as a result of its manufacture, formulation, and use as a solvent and extractive agent, paint and varnish remover, cleaning and degreasing agent, cleaning and maintenance reagent, and chemical intermediate. TCP is also used as a pesticide in the formulations with dichloropropenes in the manufacture of D-D, a soil fumigant. 1,2,3-Trichloropropane (TCP) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of malignant tumor formation at multiple sites in multiple species of experimental animals. The California (DHS) action level for 1,2,3 TCP is 0.005 $\mu\text{g/L}$.

Hexavalent Chromium: This chemical is a dissolved heavy metal that is or has been used in industrial processes, such as metal plating and as a corrosion inhibitor in cooling tower water. Chromium VI is a known human carcinogen. Chromium VI detection in drinking water wells has resulted in well closures. There is no Federal or State regulatory standard for chromium VI. However, California Senate Bill 351 proposes to have one in place starting January 1, 2004. For now, the regulatory standards being used apply only to total chromium, the combined concentrations of chromium III and chromium VI. The risk-based California drinking water standard or maximum contaminant level (MCL) of 50 $\mu\text{g/L}$ has been established for total chromium (chromium III and chromium VI).

Polybrominated Diphenyl Ether (PBDE): A family of flame-retardants used in polyurethane foam, textiles, and plastic electronic casings. This chemical bioaccumulates in marine mammals, birds, and humans. No actions levels are currently available.